CURRICULUM VITAE
Avraham Raz

ADDRESS:

4251 McNay Court, West Bloomfield, MI 48033

Personal:

Born March 3, 1945 in Bucharest, Roumania [redacted]

Married, with 3 children

1963-67 Served in Israel Defence Forces (Captain)

Degrees:

1970 B.Sc. in Biology from the Ben-Gurion University of the Negev, Beer-Sheva.

1972 M.Sc. (with distinction) in Physiology from the Ben-Gurion University of the Negev, and the Hebrew University of Jerusalem.

1978 Received Ph.D. from the Weizmann Institute of Science, Rehovot, Israel.
Title of thesis: Structural and Functional Changes in Cells and Membranes in Response to Drugs and Concanavalin A.

Positions Held:

1988 Adjunct Professor, Department of Radiation Oncology, Wayne State University School of Medicine, Detroit, Michigan

1987 Director of Cancer Metastasis Program
Michigan Cancer Foundation, Detroit, Michigan.

1987 Member, Michigan Cancer Foundation, Detroit, Michigan.

1986-1988 Associate Professor, Department of Cell Biology,
The Weizmann Institute of Science, Rehovot, Israel

1981-1986 Senior Scientist at the Department of Cell Biology

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Avraham Raz, Ph.D.

1983	Incumbent of the Sophie M.T. & Richard S. Richards Career Development Chair in Cancer Research in perpetuity. Endowed by Mrs. Sophie M.T. Richards
1980-1981	Research Fellow at the Department of Cell Biology, The Weizmann Institute of Science, Rehovot, Israel
1978-1980	Visiting Scientist at the National Cancer Institutes, Frederick Cancer Research Facility, Frederick, MD, USA

Grants and Awards:

1976	"Bondi Memorial Award" for graduate students of the Feinberg Graduate School of the Weizmann Institute of Science.
1980-1982	Israel Cancer Research Fund, USA
1982-1987	Abic
1983	Incumbent of the Sophie M.T. & Richard S. Richards Career Development Chair in Cancer Research in perpetuity. Endowed by Mrs. Sophie M.T. Richards
1983-1984	The Israel Cancer Association
1983-1986	PHS R01 - Grant awarded by the National Cancer Institute, DHHS, USA
1984-1987	National Council for Research and Development, Israel and DKFZ, Heidelberg, Federal Republic of Germany
1985	H. Dudley Wright Research Award in Membrane Research. The Weizmann Institute of Science
1986-1988	Israel Cancer Research Fund, USA
1986-1988	The Minerva Foundation, Federal Republic Germany
1987-1988	Leo & Julia Forchheimer Center for Molecular Genetics, The Weizmann Institute of Science
1987-1990	PHS R01 - Grant awarded by the National Cancer Institute, DHHS, USA
1987	The Paul Zuckerman Support Foundation for Cancer Research. Michigan Cancer Foundation, USA

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Avraham Raz, Ph.D.

1988	Ad Hoc Member Pathology B Study Section - National Institutes of Health, Bethesda, Maryland.
1988-1989	"The Role of Engineering Designed Polypeptides on Murine Tumor Cell" - Grant awarded by AMGen, Boulder, CO.
1988-1989	"The Expression of Endogeneous Tumor Cell Surface Lectins in Relation to the Metastatic Phenotype of UV-2237 Fibrosarcoma Cells" - Grant awarded by the American Cancer Society.

Membership in Scientific Service Bodies

Israel Biochemical Society
European Association for Cancer Research
American Association for Cell Biology
American Association for Cancer Research

Editorial Activity

Editorial Advisory Board: Cancer Metastasis Reviews
Editorial Board: Anti-Cancer Research
Editorial Adviser: Revisiones Sobre Biologia Celular (RBC)
International Editorial Board, Excerpta Medica

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Invited Speaker at International Symposia

International Workshop on Membranes in Tumor Growth. Italy, June 1982

Bat-Sheva Seminar on Tumor Metastasis: Control Mechanisms. Israel, May 1983 (Organizer)

Second International Workshop on Membranes in Tumor Growth. Italy, June 1985

First International Conference of Anticancer Research. Greece, October 1985 (Session Chairman)

Biological and Therapeutic Aspects of Cancer Metastasis. Spain, April 1986 (Session Chairman)

Franco-Israeli Colloquium on Lectins. France, July 1986 (Session Chairman)

UCLA Symposium on Tumor Progression and Metastasis. U.S.A., April 1987

International Congress on Cancer Metastasis: Biological and Biochemical Mechanisms and Clinical Aspects. Italy, May 1987

Bat-Sheva Seminar on Tumor Malignancy: Pathogenesis and Prevention of Tumor Dissemination. Israel, September 1987 (Organizer)

Lake Ontario Metastasis Group Meeting. Canada, October 1987 (Plenary Speaker)

CIBA Foundation Symposium on Metastasis. United Kingdom, April 1988

'88 Sapporo Cancer Seminar: Symposium on Cancer Progression and Metastasis. Japan, July 1988

Gordon Conference Meeting: Genetic Determinants of Cancer, Etiology, Development, and Phenotype. Rhode Island, August 1988

2nd International Conference of the Metastasis Research Society Together with The-SEK-of the Deutsche Krebsgesellschaft. Federal Republic of Germany, September 1988

Second International Conference of Anticancer Research. Greece, October 1988 (Organizing Committee)

Lake Ontario Metastases Group Meeting. U.S.A., October 1988 (Organizer)

International Symposium: Critical Determinants in Cancer Progression and Metastasis. U.S.A., March 1989

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Avraham Raz, Ph.D.

List of Publications

1. Livne, A. & **Raz, A.** (1971) Erythrocyte fragility and potassium efflux as affected by temperature and hemolyzing rate. FEBS Letters, 16: 99-101.

2. **Raz, A.**, Schurr, A. & Livne, A. (1972) Ther interaction of hashish components with human erythrocytes. Biochim. Biophys. Acta. 274: 269-271.

3. **Raz, A.** & Livne, A. (1973) Differential effects of lipids on the osmotic fragility of erythrocytes. Biochim. Biophys. Acta 311: 222-229.

4. Raz, A., Schurr, A., Livne, A. & Goldman, (1973) Effect of Hashish compounds in rat liver lysosomes in vitro Biochem. Pharmacol. 22: 3129-3132.

5. **Raz, A.** & Goldman, R. (1974) Spontaneous fusion of rat liver lysosomes in vitro Nature 247: 206-208.

6. Goldman, R. & **Raz, A.** (1975) Concanavalin A and the in vitro induction in macrophages of vacuolation and lysosomal enzyme synthesis. Exp. Cell Res 96: 393-405.

7. **Raz, A.** & Goldman, R. (1976) Enhancement of Con A-induced vacuolation in macrophages by local anesthetics (Chlorpromazine). Biochim. Biophys. Acta 433: 437-442.

8. **Raz, A.** & Goldman, R. (1976) Effects of local anesthetics on intracellular fusion process: enhancement of Con A induced macrophage vacuolation. Biochim. Biophys. Acta 455: 226-240.

9. **Raz, A.** & Goldman, R. (1976) The in vitro effect of hydrocortisone on endocytosis in cultured mouse peritoneal macrophages. J. Reticuloend. Soc. 20: 177-186.

10. **Raz, A.** & Goldman, R. (1976) Differential effects of lipids on the osmotic fragility of lysosomes. Experientia. 32: 447-449.

11. **Raz, A.** & Goldman, R. (1976) Effects of hashish compounds on mouse peritoneal macrophages. Lab. Invest. 34: 69-76.

12. Bach, D., **Raz, A.** & Goldman, R. (1976) The interaction of hashish compounds with the planar lipid membranes (BLM). Biochem. Pharmacol. 25: 1241-1244.

13. Bach, D., **Raz, A.** & Goldman, R. (1976) The effect of hashish compounds on phospholipid phase transition. Biochim. Biophys. Acta 436: 889-894.

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14. Hershkowitz, M., Goldman, R. & **Raz, A.** (1977) Effect of Cannabinoids on neurotransmitter uptake, ATPase activity and morphology of mouse brain synaptosomes. Biochem. Pharmacol. 26: 1327-1331.

15. **Raz, A.**, Shahar, A. & Goldman, R. (1977) Characterization of an in vivo induced peritonealmacrophage population following intraperitoneal injection of Concanavalin A. J. Reticuloend. Soc. 22: 445-46.

16. Inbar, **M.**, Yulli, I. & **Raz, A.** (1977) Contact-mediated changes in the fluidity of membrane lipids in normal and malignant transformed mammalian fibroblasts. Exp. Cell Res. 105: 325-335.

17. **Raz, A.**, Inbar, M. & Goldman, R. (1977) A differential interaction in vitro of mouse macrophages with normal lymphocytes and malignant lymphoma cells. Eur. J. Cancer 13: 605-615.

18. **Raz, A.**, Goldman, R., Yuli, I. & Inbar, M. (1978) Isolation of plasma membrane fragments and vesicles from ascites fluids of lymphoma-bearing mice and their possible role in the escape mechanism of tumors from host immune rejection. Cancer Immunol. Immunother. 4: 53-59.

19. **Raz, A.**, Barzilai, R., Spira, G. & Inbar, M. (1978) Oncogenicity and immunogenicity associated with membranes isolated from cell-free ascites fluid of lymphoma-bearing mice. Cancer Res. 38: 2480-2485.

20. **Raz, A.**, Collard, J. G. & Inbar, M. (1978) Decrease in 5'-nucleotidase activity in malignant transformed and normal stimulated cells. Cancer Res. 38: 1258-1262.

21. Sela, B-A, **Raz, A.** & Geiger, B. (1978) Antibodies to ganglioside GM_1 induce mitogenic stimulation and cap formation in rat thymocytes. Eur. J. Immunol. 8: 268-274.

22. Facchinetti, T., **Raz, A.** & Goldman, R. (1978) A differential interaction of daunomycin, adriamycin and N-Trifluoracetyladriamycin 14-valerate with mouse peritoneal macrophages. Cancer Res. 38: 3944-3949.

23. Goldman, R., Facchinetti, T., Bach, D., **Raz, A.** & Shinitzky, M. (1978) A differential interaction of daunomycin, adriamycin and their derivatives with human erythrocytes and phospholipid bilayers. Biochim. Biophys. Acta 512: 254-264.

24. Bar-Shavit, Z., **Raz, A.** & Goldman, R. (1979) Compoement and Fc receptor-mediated phagocytosis of normal and stimulated mouse peritoneal macrophages. Eur. J. Immunol. 9: 385-391.

25. **Raz, A.**, Fogler, W.E. & Fidler, I. J. (1979) The effect of experimental conditions on the expression of in vitro-mediated tumor cytotoxicity mediated by murine macrophages. Cancer Immunol. Immunother. 7: 157-163.

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26. Goldman, R., Bar-Shavit, Z. & **Raz, A.** (1980) Functional similarity and diversity in peritoneal macrophage populations induced in vivo by various stimuli. Adv. Exp. Med. Biol. 121A: 323-332.

27. Hart, I. R., **Raz, A.** & Fidler, I. J. (1980) Effect of cytoskeleton-disrupting agents on the metastatic behaviour of melanoma cells. J. Nat. Cancer Inst. 64: 891-900.

28. **Raz, A.**, McLellan, W.L., Hart, I.R., Bucana, C.D., Hoyer, L. C. Sela, B-A., Gradsten,m P. & Fidler, I.J. (1980) Cell surface properties of B16 melanoma variants with differing metastatic potential. Cancer Res. 40: 1645-1651.

29. **Raz, A.**, Bucana, C., McLellan, W.L. & Fidler, I. J. (1980) The distribution of membrane anionic sites on B16 melanoma variants with differing lung colonizing potential. Nature 284: 363-364.

30. **Raz, A.** & Bucana, C. (1980) The redistribution of surface immunoglobulin induces the rearrangement of some membrane integral protein. Biochem. Biophys. Acta, 597: 615-621.

31. **Raz, A.** & Hart, I. R. (1980) Murine melanoma: A model for intracranial metastasis. Brit. J. Cancer 42: 331-341.

32. Fogler, W.E., **Raz, A.** & Fidler, I.J. (1980) The in situ activation of murine macrophages by liposomes containing lymphokines. Cell. Immunol. 53: 214-219.

33. Fidler, I.J. **Raz, A.**, Fogler, W.E. & Poste, G. (1980) Pulmonary localization of intravenously injected liposomes. In: Cancer Chemotherapy and Immunopharmacology. G. Mathe (Ed.), Berlin Springer, pp. 246-251.

33. Fidler, I.J., **Raz, A.**, Fogler, W.E. & Poste, G. (1980) Pulmonary localization of intravenously injected liposomes. In: Cancer Chemotherapy and Immunopharmacology. G. Mathe (Ed.), Berlin Springer, pp. 246-251.

34. Fidler, I.J., Hart, I.R., **Raz, A.**, Fogler, W.E., Kirsh, R. & Poste, G. (1980) Activation of tumoricidal properties in macrophages by lipsome-encapsulated lymphokines. In vivo studies. In: Liposomes and immunobiology. Tom & Six (Eds.) Elsevier, N.Y., pp. 109-118.

35. Poste, G., Kirsh, R., **Raz, A.**, Sone, S., Bucana, C., Fogler, W.E. & Fidler, I.J. (1980) Activation of tumoricidal properties in macrophages by liposome-encapsulated lymphokines: In vitro studies. In: Liposomes and immunobiology. Tom & Six (Eds.) Elsevier, N.Y., pp 93-107.

36. **Raz, A.**, Hanna, N. & Fidler, I.J. (1981) The in vivo isolation of a metastatic tumor cell variant involves selective and not adaptive processes. J. Natl. Cancer Inst. 66: 183-189.

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37. Fidler, I.J., **Raz, A.**, Fogler, W.E., Kirsh, R., Bugelski, P. & Poste, G. (1981) The design of liposomes to improve delivery of macrophage-augmenting agents to alveolar macrophages. Cancer Res. 40: 4460-4466.

38. **Raz, A.**, Bucana, C., Fogler, W.E., Poste, G. & Fidler, I.J. (1981) Biochemical, morphological and ultrastructural studies on the uptake of liposome-encapsulated lymphokines by murine macrophages. Cancer Res. 41: 487-494.

39. Fidler, I.J., **Raz, A.**, Fogler, W.E., Hoyer, L.C. & Poste, G. (1981) The role of plasma membrane receptors and the kinetics of macrophage activation by lymphokines encapsulated in liposomes. Cancer Res. 41: 495-504.

40. Fidler, I.J., Davis, T.W. & **Raz, A.** (1981) The influence of host health and environment on natural cytotoxicity of mouse macrophages. Cancer Immunol. Immunother. 11: 195-229.

41. Fidler, I.J. & **Raz, A.** (1981) The induction of tumoricidal capacities in mouse and rat macrophages by lymphokines. In: Lymphokine Reports. E. Pick (ed)., Academic Press, N.Y. 3: 345-363.

42. **Raz, A.** & Lotan, R. (1981) Lectin-like activities associated with human and murine neoplastic cells. Cancer Res. 41: 3642-47.

43. Ben-Ze'ev, A. & **Raz, A.** (1981) Multinucleation and inhibition of cytokinesis in suspended cells: Reversal upon reattachment to a substrate. Cell. 26: 107-115

44. Poste, G., Bucana, C., **Raz, A.**, Bugelski, P., Kirsh, R. & Fidler, I.J. (1982) Analysis of the fate of systemically administered liposomes and implications for their use in drug delivery. Cancer Res. 42: 1412-1422.

45. **Raz, A.** (1982) B16 melanoma cell variants: Irreversible inhibition of growth and induction of morphological differentiation by anthracycline antibiotics. J. Natl. Cancer Inst. 69: 629-638.

46. **Raz, A.** & Ben-Ze'ev, A. (1982) Growth control and cell spreading: Differential response in preneoplastic and in metastatic cell variants. Int. J. Cancer 29: 711-715.

47. **Raz, A.** (1982) Regional emergence of metastatic heterogeneity in a growing tumor. Cancer Lett., 17: 153-160.

48. **Raz, A.** & Lotan, R. (1982) On the possible role of tumor-associated lectins in metastasis. In: Membranes in tumor growth. T Galeotti, G. Neri, S., Papa (Eds.) Elsevier/North Holland Biomedical Press, pp. 213-221.

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49. **Raz, A.** & Geiger, B. (1982) Altered organization of cell-substrate contacts and membrane associated cytoskeleton in tumor cell variants exhibiting different metastatic capabilities. Cancer Res. 42: 5183-5190.

50. Lotan, R. & **Raz, A.** (1983) Metastic melanoma cells selected for reduced homotypic aggregation capability exhibited low colony formation in vivo and in culture. Cancer Res. 43: 2088-2093.

51. **Raz, A.** & Ben-Ze'ev, A. (1983) Modulation of the metastatic capability in B16 melanoma by cell shape. Science 221: 1307-1310.

52. **Raz, A.** (1983) The biological heterogeneity of malignant tumors. Ha-Refuah CIV: 458-460. (J. Israel Med. Assoc).

53. Volk, T., Geiger, B. & **Raz, A.** (1984) Motility and adhesive properties of high- and low-metastatic neoplastic cells. Cancer Res. 44: 811-824.

54. Reich, S., Rosin, H., Levy, M., Karkash R., & **Raz, A.** (1984) Cell-substrate interaction: A method for evaluating the possible correlation between metastatic phenotype and cell surface energy. Exp. Cell Res. 153: 556-560.

55. **Raz, A.**, Meromsky, L., Carmi, P., Karkash, R., Lotan, D. & Lotan, R. (1984) Monoclonal antibodies to endogenous galatoce-specific tumor cell lines. EMBO J. 3: 2979-2983.

56. Eliyahu, D., **Raz, A.**, Gruss, P., Givol, D. & Oren, M. (1984) The p53 cellular tumor antigen can participate in transformation of normal embryonic cells. Nature 312: 646-649.

57. Kris, R.M., Avivi, A., Bar-Eli, M., Aloni, Y., Carmi, P., Schlessinger, J. & **Raz, A.** (1985) The expression of Ki-ras oncogene in tumor cell variants exhibiting different metastatic capabilities. Int. J. Cancer 35: 227-230.

58. Ben-Ze'ev, A. & **Raz, A.** (1985) The relationship between the organization and synthesis of vimentin and the metastatic capability of B16 melanoma cells. Cancer Res. 45: 2632-2641.

59. Zvibel, I. & **Raz, A.** (1985) The establishment and characterization of a new BALB/c angiosarcoma tumor system. Int. J. Cancer. 36: 261-272.

60. **Raz, A.** (1985) Cytoskeleton organization and adhesive properties of metastasizing tumor cells. In: "Cell Membranes and Cancer." T. Galeotti et al., (eds) Elsevier, N.Y., pp. 51-55.

61. Lotan, R., Lotan, D. & **Raz, A.** (1985) Inhibition of tumor cell colony formation in culture by a monoclonal to endogenous lectin. Cancer Res. 45: 4349-4353.

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62. Geiger, B., Volk, T. & **Raz, A.** (1985) Cell contacts and cytoskeletal organization of metastatic cell variants. Exp. Biol. Med. 10: 39-53.

63. **Raz, A.**, Zoller, M. & Ben-Ze'ev, A. (1986) Cellular configuration and adhesive properties of metastasizing and nonmetastasizing BSp73 rat adenocarcinoma cells. Exp. Cell Res. 162: 127-141.

64. Ben-Ze'ev, A., Zoller, M. & **Raz, A.** (1986) Differential expression of intermediate filament proteins in metastasizing and non-metastasizing variants of the BSp73 tumor. Cancer Res. 46: 785-790.

65. **Raz, A.**, Meromsky, L. & Lotan, R. (1986) Differential expression of endogenous lectins on the surface of nontumorigenic, tumorigenic and metastatic cells. Cancer Res. 46: 3667-3672.

66. Meromsky, L., Lotan, R. & **Raz, A.** (1986) Implications of endogenous tumor cell surface lectins as mediators of cellular interactions and lung colonization. Cancer Res. 46: 5270-5275.

67. **Raz, A.** & Fidler, I.J. (1986) Some biochemical properties associated with the metastatic potential of tumor cells. In: "Receptors in Cell Recognition and Developmental Processes." C.B. Price & R.M. Gorczynski (eds.) Academic Press, pp. 287-303.

68. **Raz, A.**, Meromsky, L., Zvibel, I. and Lotan, R. (1987) Transformation related changes in the expression of endogenous cell lectins. Int. J. Cancer 39: 353-360.

69. **Raz, A.** & Ben-Ze'ev, A. (1987) Cell-contact and -architecture of malignant cells and their relationship to metastasis. Cancer Metast. Rev. 6: 3-21.

70. Nabi, I.R. & **Raz, A.** (1987) Cell shape modulation alters glycosylation of a metastatic melanoma cell surface antigen. Int. J. Cancer. 40: 396-402.

71. **Raz, A.** & Lotan, R. (1987) Endogenous galactoside binding lectins: A new class of functional tumor cell surface molecules related to metastasis. Cancer Met. Rev. 6: 433-452.

72. **Raz, A.**, Avivi, A., Pazerini, G. & Carmi, P. (1987) Cloning and expression of cDNA for two endogenous UV-2237 fibrosarcoma lectin genes. Exp. Cell Res., 173: 109-116, 1987.

73. **Raz, A.**, Carmi, P. & Pazerini, G. (1988) The expression of two different endogenous galactoside-binding lectins sharing sequence homology. Cancer Research 48: 645-649.

74. Lotan, R. & **Raz, A.** (1988) Endogenous galactoside-specific lectins as mediators of tumor cell adhesion. J. Cell. Biochem. 37: 107-117.

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75. Nabi, I.R. & Raz, A. (1988) The loss of metastatic responsiveness to cell shape modulation in a newly characterized B16 melanoma Adhesive cell variant. Cancer Research 48: 1258-1264.

76. Raz, A. & Lotan, R. (1988) Tumor cell surface lectins and metastasis. Tumor Progression and Metastasis 237-244.

77. Raz, A. (1988) Actin organization, cell motility, and metastasis. In: "Cancer Metastasis: Biological and Biochemical Mechanisms and Clinical Aspects," K. Hellman, L.A. Liotta and G. Prodi, eds., Plenum Publ. Corp., New York, in press.

78. Lotan, R. & Raz, A. (1988) Lectins in Cancer Cells. Membrane in Cancer Cells. New York Academy of Science, in press.

79. Raz, A. (1988) Adhesive properties of metastasizing tumor cells. The Ciba Foundation, in press.

80. Lotan, R., Carralero, D., Lotan, D. & Raz, A. (1988) Biochemical and immunological characterization of K-1735P melanoma galactoside-binding lectins and their modulation by differentiation inducers. Submitted to Cancer Research.

81. Raz, A., Pazerini, G. & Carmi, P. (1988) The metastasis-associated galactoside-binding lectin is a chimeric gene product with the homology to an IgE-binding protein. Submitted to Nature.

82. Linnemann, Raz, A., Bock, E. (1988) Differential expression of cell adhesion molecules in variants of K1735 melanoma cells differing in metastatic capacity. Submitted to Int. J. Cancer.

83. Nabi, I.R. and Raz, A. (1988) Cell shape and the metastatic phenotype. Proceedings of the Metastasis Congress Heidelberg, in press.

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